Format No: CP/TF/01

# TEST REPORT OF CEMENT CONCRETE CUBES

**Lab ID** : **CP-2019-02-27-75** **Date: 07/01/2019**

**Customer** : Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.

**Address** : Vidyaranyapura Sub Division, BBMP, Bangalore.

**Project Name** : Construction of RCC Drain at 9th Main Road Sapthagiri Layout in Ward No.09 (Vidyaranyaoura) Vidyaranyapura Sub Division.

**Agency** : Sri.K.Anil Kumar No:84-L, 2ND Floor, 3rd Cross, 4th Main, HAL 3rd Stage Bangalore-560075.

**Customer's Reference** : BBMP/EE/BTP/WO/189/2018-19

**Source of Sample** : Sample supplied by Agency

**Sample Condition** : Satisfactory

**Date of Receipt** : 02-01-19

**Customer ID** : Drain Bottom Slab Concrete

**Sample Type /Size** : 150X150X150 mm

**Sample grade/Age** : M20 / 7 Days Compressive Strength

**Reference to BIS codes** : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

**Date of test** : 07/01/2019

| Sl. No. | Identification Mark | Grade of concrete | Date of Casting | Date of Testing | Dimension of the Specimen (mm) | Cross sectional area (Sq.mm) | Weight of the sample (kg) | Failure Load (KN) | Compressive strength ($N/mm^2$) | Average Compressive Strength ($N/mm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Drain Bottom Slab Concrete | M20 | 31/12/2018 | 07/01/2019 | 150.25 X 151.33 X 151.19 | 22737 | **8.624** | 417.6 | 18.4 | 18.6 |
| 2 | Drain Bottom Slab Concrete | M20 | 31/12/2018 | 07/01/2019 | 149.06 X 151.86 X 151.46 | 22636 | **8.396** | 427.3 | 18.9 | |
| 3 | Drain Bottom Slab Concrete | M20 | 31/12/2018 | 07/01/2019 | 149.69 X 151.78 X 151.43 | 22720 | **8.667** | 421.8 | 18.6 | |

**Note:**

The results pertain to the samples received and tested.
All information furnished by Customer/Representative
Any correction in the report will make this report invalid
This report without prior written approval should not be reproduced or published in full or part.
Samples will be disposed after 90 days from the date of issue of test certificate

**FOR CIVIL Pro.**

**R KARTHIK RECHAN**
Authorized Signatory
**Quality Manager**

Assistant Executive Engineer
Vidyaranyapura Sub Division
BBMP, Bangalore -97

CIVIL PRO Sig..... Date..... BANGALORE



****End of Report****

M : 9972924526 | Tel : +91 80 23444801 | e : rechan6630@yahoo.co.in, civilproexperts@gmail.com

HIGHWAY & BUILDING MATERIALS TESTING LABORATORY | STRUCTURAL |
GEO TECHNICAL | PROJECT MANAGEMENT | SURVEYING SERVICES |

CIVIL PRO
AN ISO 9001 : 2008 COMPANY &NABL ACCREDITED LABORATORY AS PER ISO/IEC 17025:2005
# 4, 7TH MAIN MALLESWARAM, BANGALORE -3

Format No: CP/TF/01

# TEST REPORT OF CEMENT CONCRETE CUBES

**Date: 28/01/2019**

| | | |
|---|---|---|
| **Lab ID** | : | **CP-2019-02-27-75** |
| **Customer** | : | Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore. |
| **Address** | : | Vidyaranyapura Sub Division, BBMP, Bangalore. |
| **Project Name** | : | Construction of RCC Drain at 9th Main Road Sapthagiri Layout in Ward No.09 (Vidyaranyaoura) Vidyaranyapura Sub Division. |
| **Agency** | : | Sri.K.Anil Kumar No:84-L, 2ND Floor, 3rd Cross, 4th Main, HAL 3rd Stage Bangalore-560075. |
| **Customer's Reference** | : | BBMP/EE/BTP/WO/189/2018-19 |
| **Source of Sample** | : | Sample supplied by Agency |
| **Sample Condition** | : | Satisfactory |
| **Date of Receipt** | : | 02-01-19 |
| **Customer ID** | : | Drain Bottom Slab Concrete |
| **Sample Type /Size** | : | 150X150X150 mm |
| **Sample grade/Age** | : | M20 / 28 Days Compressive Strength |
| **Reference to BIS codes** | : | IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5 |
| **Date of test** | : | 28/01/2019 |

| Sl. No. | Identification Mark | Grade of concrete | Date of Casting | Date of Testing | Dimension of the Specimen (mm) | Cross sectional area (Sq.mm) | Weight of the sample (kg) | Failure Load (KN) | Compressive strength ($N/mm^2$) | Average Compressive Strength ($N/mm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Drain Bottom Slab Concrete | M20 | 31/12/2018 | 28/01/2019 | 150.40 X 149.30 X 150.06 | 22455 | **8.937** | 531.0 | 23.6 | 23.4 |
| 2 | Drain Bottom Slab Concrete | M20 | 31/12/2018 | 28/01/2019 | 150.92 X 151.12 X 150.38 | 22808 | **8.945** | 523.2 | 22.9 | |
| 3 | Drain Bottom Slab Concrete | M20 | 31/12/2018 | 28/01/2019 | 149.66 X 149.30 X 150.66 | 22345 | **8.993** | 528.8 | 23.7 | |

**Note:**
The results pertain to the samples received and tested.
All information furnished by Customer/Representative
Any correction in the report will make this report invalid
This report without prior written approval should not be reproduced or published in full or part.
Samples will be disposed after 90 days from the date of issue of test certificate

**FOR CIVIL Pro.**

**R KARTHIK RECHAN**
Authorized Signatory
**Quality Manager**

Assistant Executive Engineer
Vidyaranyapura Sub Division
BBMP, Bangalore-97

CIVIL Pro Sig..... Date..... BANGALORE



****End of Report****

M : 9972924526 | Tel : +91 80 23444801 | e : rechan6630@yahoo.co.in, civilproexperts@gmail.com

HIGHWAY & BUILDING MATERIALS TESTING LABORATORY | STRUCTURAL |
GEO TECHNICAL | PROJECT MANAGEMENT | SURVEYING SERVICES |

CIVIL PRO
AN ISO 9001 : 2008 COMPANY &NABL ACCREDITED LABORATORY AS PER ISO/IEC 17025:2005
# 4, 7TH MAIN MALLESWARAM, BANGALORE -3

Format No: CP/TF/01

# TEST REPORT OF CEMENT CONCRETE CUBES

| | | |
|---|---|---|
| **Lab ID** | : | **CP-2019-02-27-75** **Date: 07/01/2019** |
| **Customer** | : | Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore. |
| **Address** | : | Vidyaranyapura Sub Division, BBMP, Bangalore. |
| **Project Name** | : | Construction of RCC Drain at 9th Main Road Sapthagiri Layout in Ward No.09 (Vidyaranyaoura) Vidyaranyapura Sub Division. |
| **Agency** | : | Sri.K.Anil Kumar No:84-L, 2ND Floor, 3rd Cross, 4th Main, HAL 3rd Stage Bangalore-560075. |
| **Customer's Reference** | : | BBMP/EE/BTP/WO/189/2018-19 |
| **Source of Sample** | : | Sample supplied by Agency |
| **Sample Condition** | : | Satisfactory |
| **Date of Receipt** | : | 02-01-19 |
| **Customer ID** | : | Drain Bottom Slab Concrete |
| **Sample Type /Size** | : | 150X150X150 mm |
| **Sample grade/Age** | : | M20 / 7 Days Compressive Strength |
| **Reference to BIS codes** | : | IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5 |
| **Date of test** | : | 07/01/2019 |

| Sl. No. | Identification Mark | Grade of concrete | Date of Casting | Date of Testing | Dimension of the Specimen (mm) | Cross sectional area (Sq.mm) | Weight of the sample (kg) | Failure Load (KN) | Compressive strength ($N/mm^2$) | Average Compressive Strength ($N/mm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Drain Bottom Slab Concrete | M20 | 31/12/2018 | 07/01/2019 | 151.01 X 151.75 X 150.46 | 22916 | **8.624** | 435.2 | 19.0 | 18.6 |
| 2 | Drain Bottom Slab Concrete | M20 | 31/12/2018 | 07/01/2019 | 150.80 X 150.68 X 150.99 | 22723 | **8.396** | 416.2 | 18.3 | |
| 3 | Drain Bottom Slab Concrete | M20 | 31/12/2018 | 07/01/2019 | 150.65 X 149.66 X 149.42 | 22545 | **8.667** | 420.1 | 18.6 | |

**Note:**
The results pertain to the samples received and tested.
All information furnished by Customer/Representative
Any correction in the report will make this report invalid
This report without prior written approval should not be reproduced or published in full or part.
Samples will be disposed after 90 days from the date of issue of test certificate

**FOR CIVIL Pro.**

**R KARTHIK RECHAN**
Authorized Signatory
**Quality Manager**

Assistant Executive Engineer
Vidyaranyapura Sub Division
BBMP, Bangalore-97

CIVIL Pro Sig..... Date..... BANGALORE


****End of Report****

M : 9972924526 | Tel : +91 80 23444801 | e : rechan6630@yahoo.co.in, civilproexperts@gmail.com

HIGHWAY & BUILDING MATERIALS TESTING LABORATORY | STRUCTURAL |
GEO TECHNICAL | PROJECT MANAGEMENT | SURVEYING SERVICES |

CIVIL PRO
AN ISO 9001 : 2008 COMPANY &NABL ACCREDITED LABORATORY AS PER ISO/IEC 17025:2005
# 4, 7TH MAIN MALLESWARAM, BANGALORE -3

Format No: CP/TF/01

# TEST REPORT OF CEMENT CONCRETE CUBES

**Lab ID** : **CP-2019-02-27-75** **Date: 28/01/2019**

**Customer** : Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.

**Address** : Vidyaranyapura Sub Division, BBMP, Bangalore.

**Project Name** : Construction of RCC Drain at 9th Main Road Sapthagiri Layout in Ward No.09 (Vidyaranyaoura) Vidyaranyapura Sub Division.

**Agency** : Sri.K.Anil Kumar No:84-L, 2ND Floor, 3rd Cross, 4th Main, HAL 3rd Stage Bangalore-560075.

**Customer's Reference** : BBMP/EE/BTP/WO/189/2018-19

**Source of Sample** : Sample supplied by Agency

**Sample Condition** : Satisfactory

**Date of Receipt** : 02-01-19

**Customer ID** : Drain Bottom Slab Concrete

**Sample Type /Size** : 150X150X150 mm

**Sample grade/Age** : M20 / 28 Days Compressive Strength

**Reference to BIS codes** : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

**Date of test** : 28/01/2019

| Sl. No. | Identification Mark | Grade of concrete | Date of Casting | Date of Testing | Dimension of the Specimen (mm) | Cross sectional area (Sq.mm) | Weight of the sample (kg) | Failure Load (KN) | Compressive strength ($N/mm^2$) | Average Compressive Strength ($N/mm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Drain Bottom Slab Concrete | M20 | 31/12/2018 | 28/01/2019 | 150.28 X 149.78 X 151.36 | 22510 | **8.937** | 539.9 | 24.0 | 23.2 |
| 2 | Drain Bottom Slab Concrete | M20 | 31/12/2018 | 28/01/2019 | 150.22 X 151.51 X 149.83 | 22759 | **8.945** | 516.2 | 22.7 | |
| 3 | Drain Bottom Slab Concrete | M20 | 31/12/2018 | 28/01/2019 | 151.15 X 151.51 X 149.38 | 22901 | **8.993** | 527.8 | 23.0 | |

**Note:**

The results pertain to the samples received and tested.
All information furnished by Customer/Representative
Any correction in the report will make this report invalid
This report without prior written approval should not be reproduced or published in full or part.
Samples will be disposed after 90 days from the date of issue of test certificate

Assistant Executive Engineer
Vidyaranyapura Sub Division
BBMP, Bangalore - 97

**FOR CIVIL Pro.**

**R KARTHIK RECHAN**
Authorized Signatory
**Quality Manager**

CIVIL Pro Sig..... Date..... BANGALORE



****End of Report****

M : 9972924526 | Tel : +91 80 23444801 | e : rechan6630@yahoo.co.in, civilproexperts@gmail.com

HIGHWAY & BUILDING MATERIALS TESTING LABORATORY | STRUCTURAL |
GEO TECHNICAL | PROJECT MANAGEMENT | SURVEYING SERVICES |

Format No: CP/TF/01

# TEST REPORT OF CEMENT CONCRETE CUBES

**Lab ID** : **CP-2019-02-27-75** **Date: 07/01/2019**

**Customer** : Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.

**Address** : Vidyaranyapura Sub Division, BBMP, Bangalore.

**Project Name** : Construction of RCC Drain at 9th Main Road Sapthagiri Layout in Ward No.09 (Vidyaranyaoura) Vidyaranyapura Sub Division.

**Agency** : Sri.K.Anil Kumar No:84-L, 2ND Floor, 3rd Cross, 4th Main, HAL 3rd Stage Bangalore-560075.

**Customer's Reference** : BBMP/EE/BTP/WO/189/2018-19

**Source of Sample** : Sample supplied by Agency

**Sample Condition** : Satisfactory

**Date of Receipt** : 02-01-19

**Customer ID** : Drain Bottom Slab Concrete

**Sample Type /Size** : 150X150X150 mm

**Sample grade/Age** : M20 / 7 Days Compressive Strength

**Reference to BIS codes** : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

**Date of test** : 07/01/2019

| Sl. No. | Identification Mark | Grade of concrete | Date of Casting | Date of Testing | Dimension of the Specimen (mm) | Cross sectional area (Sq.mm) | Weight of the sample (kg) | Failure Load (KN) | Compressive strength ($N/mm^2$) | Average Compressive Strength ($N/mm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Drain Bottom Slab Concrete | M20 | 31/12/2018 | 07/01/2019 | 150.48 X 151.57 X 149.43 | 22809 | **8.624** | 424.8 | 18.6 | 18.6 |
| 2 | Drain Bottom Slab Concrete | M20 | 31/12/2018 | 07/01/2019 | 151.42 X 150.58 X 149.25 | 22801 | **8.396** | 422.5 | 18.5 | |
| 3 | Drain Bottom Slab Concrete | M20 | 31/12/2018 | 07/01/2019 | 150.16 X 151.62 X 150.59 | 22767 | **8.667** | 424.3 | 18.6 | |

**Note:**

The results pertain to the samples received and tested.
All information furnished by Customer/Representative
Any correction in the report will make this report invalid
This report without prior written approval should not be reproduced or published in full or part.
Samples will be disposed after 90 days from the date of issue of test certificate

Assistant Executive Engineer
Vidyaranyapura Sub Division,
BBMP, Bangalore-97

**FOR CIVIL Pro.**

**R KARTHIK RECHAN**
Authorized Signatory
**Quality Manager**

CIVIL Pro Sig..... Date..... BANGALORE



****End of Report****

CIVIL PRO
AN ISO 9001 : 2008 COMPANY &NABL ACCREDITED LABORATORY AS PER ISO/IEC 17025:2005
# 4, 7TH MAIN MALLESWARAM, BANGALORE -3

Format No: CP/TF/01

# TEST REPORT OF CEMENT CONCRETE CUBES

**Lab ID** : **CP-2019-02-27-75** **Date: 28/01/2019**

**Customer** : Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.

**Address** : Vidyaranyapura Sub Division, BBMP, Bangalore.

**Project Name** : Construction of RCC Drain at 9th Main Road Sapthagiri Layout in Ward No.09 (Vidyaranyaoura) Vidyaranyapura Sub Division.

**Agency** : Sri.K.Anil Kumar No:84-L, 2ND Floor, 3rd Cross, 4th Main, HAL 3rd Stage Bangalore-560075.

**Customer's Reference** : BBMP/EE/BTP/WO/189/2018-19

**Source of Sample** : Sample supplied by Agency

**Sample Condition** : Satisfactory

**Date of Receipt** : 02-01-19

**Customer ID** : Drain Bottom Slab Concrete

**Sample Type /Size** : 150X150X150 mm

**Sample grade/Age** : M20 / 28 Days Compressive Strength

**Reference to BIS codes** : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

**Date of test** : 28/01/2019

| Sl. No. | Identification Mark | Grade of concrete | Date of Casting | Date of Testing | Dimension of the Specimen (mm) | Cross sectional area (Sq.mm) | Weight of the sample (kg) | Failure Load (KN) | Compressive strength ($N/mm^2$) | Average Compressive Strength ($N/mm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Drain Bottom Slab Concrete | M20 | 31/12/2018 | 28/01/2019 | 150.91 X 151.06 X 149.89 | 22797 | **8.937** | 531.4 | 23.3 | 23.0 |
| 2 | Drain Bottom Slab Concrete | M20 | 31/12/2018 | 28/01/2019 | 150.29 X 149.43 X 149.86 | 22458 | **8.945** | 495.0 | 22.0 | |
| 3 | Drain Bottom Slab Concrete | M20 | 31/12/2018 | 28/01/2019 | 149.20 X 151.05 X 151.01 | 22536 | **8.993** | 530.4 | 23.5 | |

**Note:**

The results pertain to the samples received and tested.
All information furnished by Customer/Representative
Any correction in the report will make this report invalid
This report without prior written approval should not be reproduced or published in full or part.
Samples will be disposed after 90 days from the date of issue of test certificate

Assistant Executive Engineer
Vidyaranyapura Sub Division
BBMP, Bangalore - 97

**FOR CIVIL Pro.**

**R KARTHIK RECHAN**
Authorized Signatory
**Quality Manager**

CIVIL Pro Sig..... Date..... BANGALORE


****End of Report****

M : 9972924526 | Tel : +91 80 23444801 | e : rechan6630@yahoo.co.in, civilproexperts@gmail.com

HIGHWAY & BUILDING MATERIALS TESTING LABORATORY | STRUCTURAL | GEO TECHNICAL | PROJECT MANAGEMENT | SURVEYING SERVICES |

Format No: CP/TF/01

# TEST REPORT OF CEMENT CONCRETE CUBES

**Lab ID** : **CP-2019-02-27-75** **Date: 07/01/2019**

**Customer** : Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.

**Address** : Vidyaranyapura Sub Division, BBMP, Bangalore.

**Project Name** : Construction of RCC Drain at 9th Main Road Sapthagiri Layout in Ward No.09 (Vidyaranyaoura) Vidyaranyapura Sub Division.

**Agency** : Sri.K.Anil Kumar No:84-L, 2ND Floor, 3rd Cross, 4th Main, HAL 3rd Stage Bangalore-560075.

**Customer's Reference** : BBMP/EE/BTP/WO/189/2018-19

**Source of Sample** : Sample supplied by Agency

**Sample Condition** : Satisfactory

**Date of Receipt** : 02-01-19

**Customer ID** : Drain Bottom Slab Concrete

**Sample Type /Size** : 150X150X150 mm

**Sample grade/Age** : M20 / 7 Days Compressive Strength

**Reference to BIS codes** : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

**Date of test** : 07/01/2019

| Sl. No. | Identification Mark | Grade of concrete | Date of Casting | Date of Testing | Dimension of the Specimen (mm) | Cross sectional area (Sq.mm) | Weight of the sample (kg) | Failure Load (KN) | Compressive strength ($N/mm^2$) | Average Compressive Strength ($N/mm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Drain Bottom Slab Concrete | M20 | 31/12/2018 | 07/01/2019 | 150.31 X 150.93 X 150.70 | 22686 | **8.624** | 412.4 | 18.2 | 18.7 |
| 2 | Drain Bottom Slab Concrete | M20 | 31/12/2018 | 07/01/2019 | 149.11 X 150.79 X 151.62 | 22484 | **8.396** | 426.4 | 19.0 | |
| 3 | Drain Bottom Slab Concrete | M20 | 31/12/2018 | 07/01/2019 | 151.75 X 150.32 X 150.17 | 22811 | **8.667** | 431.4 | 18.9 | |

**Note:**

The results pertain to the samples received and tested.
All information furnished by Customer/Representative
Any correction in the report will make this report invalid
This report without prior written approval should not be reproduced or published in full or part.
Samples will be disposed after 90 days from the date of issue of test certificate

**FOR CIVIL Pro.**

**R KARTHIK RECHAN**
Authorized Signatory
**Quality Manager**

Assistant Executive Engineer
Vidyaranyapura Sub Division
BBMP, Bangalore-97

CIVIL Pro Sig..... Date..... BANGALORE



****End of Report****

M : 9972924526 | Tel : +91 80 23444801 | e : rechan6630@yahoo.co.in, civilproexperts@gmail.com

CIVIL PRO
AN ISO 9001 : 2008 COMPANY &NABL ACCREDITED LABORATORY AS PER ISO/IEC 17025:2005
# 4, 7TH MAIN MALLESWARAM, BANGALORE -3

Format No: CP/TF/01

# TEST REPORT OF CEMENT CONCRETE CUBES

**Lab ID** : **CP-2019-02-27-75** **Date: 28/01/2019**

**Customer** : Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.

**Address** : Vidyaranyapura Sub Division, BBMP, Bangalore.

**Project Name** : Construction of RCC Drain at 9th Main Road Sapthagiri Layout in Ward No.09 (Vidyaranyaoura) Vidyaranyapura Sub Division.

**Agency** : Sri.K.Anil Kumar No:84-L, 2ND Floor, 3rd Cross, 4th Main, HAL 3rd Stage Bangalore-560075.

**Customer's Reference** : BBMP/EE/BTP/WO/189/2018-19

**Source of Sample** : Sample supplied by Agency

**Sample Condition** : Satisfactory

**Date of Receipt** : 02-01-19

**Customer ID** : Drain Bottom Slab Concrete

**Sample Type /Size** : 150X150X150 mm

**Sample grade/Age** : M20 / 28 Days Compressive Strength

**Reference to BIS codes** : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

**Date of test** : 28/01/2019

| Sl. No. | Identification Mark | Grade of concrete | Date of Casting | Date of Testing | Dimension of the Specimen (mm) | Cross sectional area (Sq.mm) | Weight of the sample (kg) | Failure Load (KN) | Compressive strength ($N/mm^2$) | Average Compressive Strength ($N/mm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Drain Bottom Slab Concrete | M20 | 31/12/2018 | 28/01/2019 | 151.27 X 151.56 X 150.75 | 22926 | **8.937** | 545.4 | 23.8 | 23.4 |
| 2 | Drain Bottom Slab Concrete | M20 | 31/12/2018 | 28/01/2019 | 150.99 X 150.43 X 151.18 | 22714 | **8.945** | 521.5 | 23.0 | |
| 3 | Drain Bottom Slab Concrete | M20 | 31/12/2018 | 28/01/2019 | 150.18 X 151.55 X 149.55 | 22759 | **8.993** | 534.8 | 23.5 | |

**Note:**

The results pertain to the samples received and tested.
All information furnished by Customer/Representative
Any correction in the report will make this report invalid
This report without prior written approval should not be reproduced or published in full or part.
Samples will be disposed after 90 days from the date of issue of test certificate

Assistant Executive Engineer
Vidyaranyapura Sub Division
BBMP, Bangalore - 97

**FOR CIVIL Pro.**

**R KARTHIK RECHAN**
Authorized Signatory
**Quality Manager**

CIVIL Pro Sig..... Date..... BANGALORE



****End of Report****

M : 9972924526 | Tel : +91 80 23444801 | e : rechan6630@yahoo.co.in, civilproexperts@gmail.com

HIGHWAY & BUILDING MATERIALS TESTING LABORATORY | STRUCTURAL | GEO TECHNICAL | PROJECT MANAGEMENT | SURVEYING SERVICES |

CIVIL PRO
AN ISO 9001 : 2008 COMPANY &NABL ACCREDITED LABORATORY AS PER ISO/IEC 17025:2005
# 4, 7TH MAIN MALLESWARAM, BANGALORE -3

Format No: CP/TF/01

# TEST REPORT OF CEMENT CONCRETE CUBES

**Date: 14/01/2019**

| | | |
|---|---|---|
| **Lab ID** | : | **CP-2019-02-27-75** |
| **Customer** | : | Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore. |
| **Address** | : | Vidyaranyapura Sub Division, BBMP, Bangalore. |
| **Project Name** | : | Construction of RCC Drain at 9th Main Road Sapthagiri Layout in Ward No.09 (Vidyaranyaoura) Vidyaranyapura Sub Division. |
| **Agency** | : | Sri.K.Anil Kumar No:84-L, 2ND Floor, 3rd Cross, 4th Main, HAL 3rd Stage Bangalore-560075. |
| **Customer's Reference** | : | BBMP/EE/BTP/WO/189/2018-19 |
| **Source of Sample** | : | Sample supplied by Agency |
| **Sample Condition** | : | Satisfactory |
| **Date of Receipt** | : | 09-01-19 |
| **Customer ID** | : | Drain Side Wall Concrete |
| **Sample Type /Size** | : | 150X150X150 mm |
| **Sample grade/Age** | : | M20 / 7 Days Compressive Strength |
| **Reference to BIS codes** | : | IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5 |
| **Date of test** | : | 14/01/2019 |

| Sl. No. | Identification Mark | Grade of concrete | Date of Casting | Date of Testing | Dimension of the Specimen (mm) | Cross sectional area (Sq.mm) | Weight of the sample (kg) | Failure Load (KN) | Compressive strength ($N/mm^2$) | Average Compressive Strength ($N/mm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Drain Side Wall Concrete | M20 | 07/01/2019 | 14/01/2019 | 151.92 X 149.64 X 150.99 | 22733 | **8.624** | 425.1 | 18.7 | 18.6 |
| 2 | Drain Side Wall Concrete | M20 | 07/01/2019 | 14/01/2019 | 149.39 X 149.19 X 151.73 | 22287 | **8.396** | 412.7 | 18.5 | |
| 3 | Drain Side Wall Concrete | M20 | 07/01/2019 | 14/01/2019 | 149.48 X 150.87 X 149.22 | 22552 | **8.667** | 417.0 | 18.5 | |

**Note:**
The results pertain to the samples received and tested.
All information furnished by Customer/Representative
Any correction in the report will make this report invalid
This report without prior written approval should not be reproduced or published in full or part.
Samples will be disposed after 90 days from the date of issue of test certificate

**FOR CIVIL Pro.**

**R KARTHIK RECHAN**
Authorized Signatory
**Quality Manager**

Assistant Executive Engineer
Vidyaranyapura Sub Division
BBMP, Bangalore-97

CIVIL PRO BANGALORE Sig..... Date.....


****End of Report****

M : 9972924526 | Tel : +91 80 23444801 | e : rechan6630@yahoo.co.in, civilproexperts@gmail.com

HIGHWAY & BUILDING MATERIALS TESTING LABORATORY | STRUCTURAL | GEO TECHNICAL | PROJECT MANAGEMENT | SURVEYING SERVICES |

Format No: CP/TF/01

# TEST REPORT OF CEMENT CONCRETE CUBES

**Lab ID** : **CP-2019-02-27-75** **Date: 04/02/2019**

**Customer** : Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.

**Address** : Vidyaranyapura Sub Division, BBMP, Bangalore.

**Project Name** : Construction of RCC Drain at 9th Main Road Sapthagiri Layout in Ward No.09 (Vidyaranyaoura) Vidyaranyapura Sub Division.

**Agency** : Sri.K.Anil Kumar No:84-L, 2ND Floor, 3rd Cross, 4th Main, HAL 3rd Stage Bangalore-560075.

**Customer's Reference** : BBMP/EE/BTP/WO/189/2018-19

**Source of Sample** : Sample supplied by Agency

**Sample Condition** : Satisfactory

**Date of Receipt** : 09-01-19

**Customer ID** : Drain Side Wall Concrete

**Sample Type /Size** : 150X150X150 mm

**Sample grade/Age** : M20 / 28 Days Compressive Strength

**Reference to BIS codes** : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

**Date of test** : 04/02/2019

| Sl. No. | Identification Mark | Grade of concrete | Date of Casting | Date of Testing | Dimension of the Specimen (mm) | Cross sectional area (Sq.mm) | Weight of the sample (kg) | Failure Load (KN) | Compressive strength ($N/mm^2$) | Average Compressive Strength ($N/mm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Drain Side Wall Concrete | M20 | 07/01/2019 | 04/02/2019 | 149.43 X 151.01 X 149.77 | 22565 | **8.937** | 534.8 | 23.7 | 23.2 |
| 2 | Drain Side Wall Concrete | M20 | 07/01/2019 | 04/02/2019 | 149.15 X 149.68 X 149.37 | 22325 | **8.945** | 509.4 | 22.8 | |
| 3 | Drain Side Wall Concrete | M20 | 07/01/2019 | 04/02/2019 | 149.21 X 151.28 X 150.86 | 22573 | **8.993** | 520.3 | 23.0 | |

**Note:**

The results pertain to the samples received and tested.
All information furnished by Customer/Representative
Any correction in the report will make this report invalid
This report without prior written approval should not be reproduced or published in full or part.
Samples will be disposed after 90 days from the date of issue of test certificate

Assistant Executive Engineer
Vidyaranyapura Sub Division
BBMP, Bangalore-97

**FOR CIVIL Pro.**

**R KARTHIK RECHAN**
Authorized Signatory
**Quality Manager**



****End of Report****

M : 9972924526 | Tel : +91 80 23444801 | e : rechan6630@yahoo.co.in, civilproexperts@gmail.com

HIGHWAY & BUILDING MATERIALS TESTING LABORATORY | STRUCTURAL|
GEO TECHNICAL| PROJECT MANAGEMENT| SURVEYING SERVICES |

Format No: CP/TF/01

# TEST REPORT OF CEMENT CONCRETE CUBES

**Lab ID** : **CP-2019-02-27-75** **Date: 14/01/2019**

**Customer** : Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.

**Address** : Vidyaranyapura Sub Division, BBMP, Bangalore.

**Project Name** : Construction of RCC Drain at 9th Main Road Sapthagiri Layout in Ward No.09 (Vidyaranyaoura) Vidyaranyapura Sub Division.

**Agency** : Sri.K.Anil Kumar No:84-L, 2ND Floor, 3rd Cross, 4th Main, HAL 3rd Stage Bangalore-560075.

**Customer's Reference** : BBMP/EE/BTP/WO/189/2018-19

**Source of Sample** : Sample supplied by Agency

**Sample Condition** : Satisfactory

**Date of Receipt** : 09-01-19

**Customer ID** : Drain Side Wall Concrete

**Sample Type /Size** : 150X150X150 mm

**Sample grade/Age** : M20 / 7 Days Compressive Strength

**Reference to BIS codes** : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

**Date of test** : 14/01/2019

| Sl. No. | Identification Mark | Grade of concrete | Date of Casting | Date of Testing | Dimension of the Specimen (mm) | Cross sectional area (Sq.mm) | Weight of the sample (kg) | Failure Load (KN) | Compressive strength ($N/mm^2$) | Average Compressive Strength ($N/mm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Drain Side Wall Concrete | M20 | 07/01/2019 | 14/01/2019 | 151.91 X 150.46 X 150.17 | 22857 | **8.624** | 433.6 | 19.0 | 18.8 |
| 2 | Drain Side Wall Concrete | M20 | 07/01/2019 | 14/01/2019 | 149.58 X 150.27 X 151.47 | 22477 | **8.396** | 416.4 | 18.5 | |
| 3 | Drain Side Wall Concrete | M20 | 07/01/2019 | 14/01/2019 | 149.13 X 150.34 X 151.20 | 22420 | **8.667** | 424.0 | 18.9 | |

**Note:**

The results pertain to the samples received and tested.
All information furnished by Customer/Representative
Any correction in the report will make this report invalid
This report without prior written approval should not be reproduced or published in full or part.
Samples will be disposed after 90 days from the date of issue of test certificate

**FOR CIVIL Pro.**

**R KARTHIK RECHAN**
Authorized Signatory
**Quality Manager**

Assistant Executive Engineer
Vidyaranyapura Sub Division
BBMP, Bangalore-97

CIVIL Pro Sig..... Date..... BANGALORE


****End of Report****

CIVIL PRO
AN ISO 9001 : 2008 COMPANY &NABL ACCREDITED LABORATORY AS PER ISO/IEC 17025:2005
# 4, 7TH MAIN MALLESWARAM, BANGALORE -3

Format No: CP/TF/01

# TEST REPORT OF CEMENT CONCRETE CUBES

**Lab ID** : **CP-2019-02-27-75** **Date: 04/02/2019**

**Customer** : Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.

**Address** : Vidyaranyapura Sub Division, BBMP, Bangalore.

**Project Name** : Construction of RCC Drain at 9th Main Road Sapthagiri Layout in Ward No.09 (Vidyaranyaoura) Vidyaranyapura Sub Division.

**Agency** : Sri.K.Anil Kumar No:84-L, 2ND Floor, 3rd Cross, 4th Main, HAL 3rd Stage Bangalore-560075.

**Customer's Reference** : BBMP/EE/BTP/WO/189/2018-19

**Source of Sample** : Sample supplied by Agency

**Sample Condition** : Satisfactory

**Date of Receipt** : 09-01-19

**Customer ID** : Drain Side Wall Concrete

**Sample Type /Size** : 150X150X150 mm

**Sample grade/Age** : M20 / 28 Days Compressive Strength

**Reference to BIS codes** : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

**Date of test** : 04/02/2019

| Sl. No. | Identification Mark | Grade of concrete | Date of Casting | Date of Testing | Dimension of the Specimen (mm) | Cross sectional area (Sq.mm) | Weight of the sample (kg) | Failure Load (KN) | Compressive strength ($N/mm^2$) | Average Compressive Strength ($N/mm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Drain Side Wall Concrete | M20 | 07/01/2019 | 04/02/2019 | 151.02 X 149.44 X 150.45 | 22569 | **8.937** | 519.2 | 23.0 | 22.8 |
| 2 | Drain Side Wall Concrete | M20 | 07/01/2019 | 04/02/2019 | 149.34 X 149.72 X 151.21 | 22360 | **8.945** | 496.2 | 22.2 | |
| 3 | Drain Side Wall Concrete | M20 | 07/01/2019 | 04/02/2019 | 150.03 X 150.08 X 149.45 | 22517 | **8.993** | 520.8 | 23.1 | |

**Note:**
The results pertain to the samples received and tested.
All information furnished by Customer/Representative
Any correction in the report will make this report invalid
This report without prior written approval should not be reproduced or published in full or part.
Samples will be disposed after 90 days from the date of issue of test certificate

Assistant Executive Engineer
Vidyaranyapura Sub Division
BBMP, Bangalore - 97

**FOR CIVIL Pro.**

**R KARTHIK RECHAN**
Authorized Signatory
**Quality Manager**

CIVIL Pro Sig..... Date..... BANGALORE


****End of Report****

M : 9972924526 | Tel : +91 80 23444801 | e : rechan6630@yahoo.co.in, civilproexperts@gmail.com

HIGHWAY & BUILDING MATERIALS TESTING LABORATORY | STRUCTURAL | GEO TECHNICAL | PROJECT MANAGEMENT | SURVEYING SERVICES |

Format No: CP/TF/01

# TEST REPORT OF CEMENT CONCRETE CUBES

**Lab ID** : **CP-2019-02-27-75** **Date: 14/01/2019**

**Customer** : Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.

**Address** : Vidyaranyapura Sub Division, BBMP, Bangalore.

**Project Name** : Construction of RCC Drain at 9th Main Road Sapthagiri Layout in Ward No.09 (Vidyaranyaoura) Vidyaranyapura Sub Division.

**Agency** : Sri.K.Anil Kumar No:84-L, 2ND Floor, 3rd Cross, 4th Main, HAL 3rd Stage Bangalore-560075.

**Customer's Reference** : BBMP/EE/BTP/WO/189/2018-19

**Source of Sample** : Sample supplied by Agency

**Sample Condition** : Satisfactory

**Date of Receipt** : 09-01-19

**Customer ID** : Drain Side Wall Concrete

**Sample Type /Size** : 150X150X150 mm

**Sample grade/Age** : M20 / 7 Days Compressive Strength

**Reference to BIS codes** : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

**Date of test** : 14/01/2019

| Sl. No. | Identification Mark | Grade of concrete | Date of Casting | Date of Testing | Dimension of the Specimen (mm) | Cross sectional area (Sq.mm) | Weight of the sample (kg) | Failure Load (KN) | Compressive strength ($N/mm^2$) | Average Compressive Strength ($N/mm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Drain Side Wall Concrete | M20 | 07/01/2019 | 14/01/2019 | 151.45 X 149.65 X 149.53 | 22664 | **8.624** | 422.5 | 18.6 | 18.5 |
| 2 | Drain Side Wall Concrete | M20 | 07/01/2019 | 14/01/2019 | 151.19 X 150.45 X 150.70 | 22747 | **8.396** | 420.7 | 18.5 | |
| 3 | Drain Side Wall Concrete | M20 | 07/01/2019 | 14/01/2019 | 149.08 X 151.46 X 150.00 | 22581 | **8.667** | 415.3 | 18.4 | |

**Note:**

The results pertain to the samples received and tested.
All information furnished by Customer/Representative
Any correction in the report will make this report invalid
This report without prior written approval should not be reproduced or published in full or part.
Samples will be disposed after 90 days from the date of issue of test certificate

Assistant Executive Engineer
Vidyaranyapura Sub Division
BBMP, Bangalore - 97

FOR CIVIL Pro.

R KARTHIK RECHAN
Authorized Signatory
Quality Manager

CIVIL PRO Sig..... Date..... BANGALORE


****End of Report****

CIVIL PRO
AN ISO 9001 : 2008 COMPANY &NABL ACCREDITED LABORATORY AS PER ISO/IEC 17025:2005
# 4, 7TH MAIN MALLESWARAM, BANGALORE -3

Format No: CP/TF/01

# TEST REPORT OF CEMENT CONCRETE CUBES

**Lab ID** : **CP-2019-02-27-75** **Date: 04/02/2019**

**Customer** : Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.

**Address** : Vidyaranyapura Sub Division, BBMP, Bangalore.

**Project Name** : Construction of RCC Drain at 9th Main Road Sapthagiri Layout in Ward No.09 (Vidyaranyaoura) Vidyaranyapura Sub Division.

**Agency** : Sri.K.Anil Kumar No:84-L, 2ND Floor, 3rd Cross, 4th Main, HAL 3rd Stage Bangalore-560075.

**Customer's Reference** : BBMP/EE/BTP/WO/189/2018-19

**Source of Sample** : Sample supplied by Agency

**Sample Condition** : Satisfactory

**Date of Receipt** : 09-01-19

**Customer ID** : Drain Side Wall Concrete

**Sample Type /Size** : 150X150X150 mm

**Sample grade/Age** : M20 / 28 Days Compressive Strength

**Reference to BIS codes** : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

**Date of test** : 04/02/2019

| Sl. No. | Identification Mark | Grade of concrete | Date of Casting | Date of Testing | Dimension of the Specimen (mm) | Cross sectional area (Sq.mm) | Weight of the sample (kg) | Failure Load (KN) | Compressive strength ($N/mm^2$) | Average Compressive Strength ($N/mm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Drain Side Wall Concrete | M20 | 07/01/2019 | 04/02/2019 | 151.47 X 149.85 X 151.74 | 22696 | **8.937** | 529.1 | 23.3 | 23.3 |
| 2 | Drain Side Wall Concrete | M20 | 07/01/2019 | 04/02/2019 | 150.59 X 150.04 X 150.73 | 22594 | **8.945** | 519.1 | 23.0 | |
| 3 | Drain Side Wall Concrete | M20 | 07/01/2019 | 04/02/2019 | 150.11 X 151.63 X 149.89 | 22761 | **8.993** | 539.5 | 23.7 | |

**Note:**

The results pertain to the samples received and tested.
All information furnished by Customer/Representative
Any correction in the report will make this report invalid
This report without prior written approval should not be reproduced or published in full or part.
Samples will be disposed after 90 days from the date of issue of test certificate

Assistant Executive Engineer
Vidyaranyapura Sub Division
BBMP, Bangalore - 97

**FOR CIVIL Pro.**

**R KARTHIK RECHAN**
Authorized Signatory
**Quality Manager**

CIVIL Pro Sig..... Date..... BANGALORE


****End of Report****

M : 9972924526 | Tel : +91 80 23444801 | e : rechan6630@yahoo.co.in, civilproexperts@gmail.com

HIGHWAY & BUILDING MATERIALS TESTING LABORATORY | STRUCTURAL |
GEO TECHNICAL | PROJECT MANAGEMENT | SURVEYING SERVICES |

Format No: CP/TF/01

## TEST REPORT OF PHYSICAL PROPERTIES OF CEMENT - 53 Grade

| | | |
|---|---|---|
| **Lab ID** | : | **CP-2019-02-27-75** **Date: 20-12-18** |
| **Customer** | : | Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore. |
| **Address** | : | Vidyaranyapura Sub Division, BBMP, Bangalore. |
| **Project Name** | : | Construction of RCC Drain at 9th Main Road Sapthagiri Layout in Ward No.09 (Vidyaranyaoura) Vidyaranyapura Sub Division. |
| **Agency** | : | Sri.K.Anil Kumar No:84-L, 2ND Floor, 3rd Cross, 4th Main, HAL 3rd Stage Bangalore-560075. |
| **Customer's Reference** | : | BBMP/EE/BTP/WO/189/2018-19 |
| **Source of Sample** | : | Sample supplied by Agency |
| **Sample Condition** | : | Satisfactory |
| **Date of Receipt** | : | 17-12-18 |
| **Sample Type** | : | Birla Super 53grade |
| **Reference to BIS codes** | : | IS 12269 : 2013, 53 Grade Ordinary Portland cement Specification ,<br>IS 4031 (Part 1,2 3,4,5, 6,11):1988<br>IS 4031 Part 1 DETERMINATION OF FINENESS BY DRY SIEVING, Clause 4.4<br>IS 4031 Part 2, Determination of Fineness by Blaine Air Permeability Method, Clause 5<br>IS 4031 Part 3, Determination of Soundness, Clause 5,Clause 6<br>IS 4031 Part 4, Determination of Consistency of Standard Cement Paste, Clause 5<br>IS 4031 Part 5, Determination of Initial & Final Setting Time, Clause 5<br>IS 4031 Part 11,DETERMINATION OF DENSITY , Clause 6 |
| **Date of test** | : | 18-12-18 |
| **Environmental Conditions during test** | : | Temperature: 26°C<br>Humidity: 72% |

| Sl.No. | Physical properties | Results | Requirement as per IS 12269: 2013 |
|---|---|---|---|
| 1 | Fineness by dry sieving (%) | 2.87 | _ |
| 2 | Finess by Air permeablity method ($m^2$/kg,Min) | 298.7 | 225$m^2$/kg, Min |
| 3 | Density (gm/cc) | 3.15 | _ |
| 4 | Standard Consistency (%) | 28.5% | Not specified |
| 5 | Initial Setting time | 165 minutes | Not less than 30 minutes |
| 6 | Final Setting time | 265 minutes | Not more than 600 minutes |
| 7 | Soundness (Le Chatelier's Method) | 1.5mm | Not more than 10 mm |

Note:

The results pertain to the samples received and tested.
All information furnished by Customer/Representative
Any correction in the report will make this report invalid
This report without prior written approval should not be reproduced or published in full or part.
Samples will be disposed after 90 days from the date of issue of test certificate

AE-09

Assistant Executive Engineer
Vidyaranyapura Sub Division
BBMP, Bangalore - 97

AE N-09

**FOR CIVIL Pro.**

**R KARTHIK RECHAN**
Authorized Signatory
**Quality Manager**

CIVIL Pro Sig..... Date..... BANGALORE



M : 9972924526 | Tel : +91 80 23444801 | e : rechan6630@yahoo.co.in, civilproexperts@gmail.com

HIGHWAY & BUILDING MATERIALS TESTING LABORATORY | STRUCTURAL |
GEO TECHNICAL | PROJECT MANAGEMENT | SURVEYING SERVICES |

CIVIL PRO
AN ISO 9001 : 2008 COMPANY &NABL ACCREDITED LABORATORY AS PER ISO/IEC 17025:2005
# 4, 7TH MAIN MALLESWARAM, BANGALORE -3

Format No: CP/TF/01

## TEST REPORT OF PHYSICAL PROPERTIES OF CEMENT - 53 Grade

| | | |
|---|---|---|
| **Lab ID** | : | **CP-2019-02-27-75** **Date: 16-01-19** |
| **Customer** | : | Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore. |
| **Address** | : | Vidyaranyapura Sub Division, BBMP, Bangalore. |
| **Project Name** | : | Construction of RCC Drain at 9th Main Road Sapthagiri Layout in Ward No.09 (Vidyaranyaoura) Vidyaranyapura Sub Division. |
| **Agency** | : | Sri.K.Anil Kumar No:84-L, 2ND Floor, 3rd Cross, 4th Main, HAL 3rd Stage Bangalore-560075. |
| **Customer's Reference** | : | BBMP/EE/BTP/WO/189/2018-19 |
| **Source of Sample** | : | Sample supplied by Agency |
| **Sample Condition** | : | Satisfactory |
| **Date of Receipt** | : | 17-12-18 |
| **Sample Type** | : | Birla Super 53grade |
| **Reference to BIS codes** | : | IS 12269 : 2013, 53 Grade Ordinary Portland cement Specification ,<br>IS 4031 Part 4, Determination of Consistency of Standard Cement Paste, Clause 5<br>IS 4031 Part 6, Determination of Compressive Strength, Clause 6 |
| **Date of test** | : | 18-12-18 |
| **Environmental Conditions during test** | : | Temperature: 26°C<br>Humidity: 72% |

**Compressive Strength**

| Sl.No. | Physical properties | Results | Requirement as per IS 12269: 2013 |
|---|---|---|---|
| 1 | 3 Days | 29.5N/mm$^2$ | Not less than 27 N/mm$^2$ |
| 2 | 7 Days | 39.5N/mm$^2$ | Not less than 37 N/mm$^2$ |
| 3 | 28 Days | 55.5N/mm$^2$ | Not less than 53 N/mm$^2$ |

**Note:**
The results pertain to the samples received and tested.
All information furnished by Customer/Representative
Any correction in the report will make this report invalid
This report without prior written approval should not be reproduced or published in full or part.
Samples will be disposed after 90 days from the date of issue of test certificate

Assistant Executive Engineer
Vidyaranyapura Sub Division
BBMP, Bangalore - 97

**FOR CIVIL Pro.**
**R KARTHIK RECHAN**
Authorized Signatory
**Quality Manager**

CIVIL Pro Sig..... Date..... BANGALORE


****End of Report****

M : 9972924526 | Tel : +91 80 23444801 | e : rechan6630@yahoo.co.in, civilproexperts@gmail.com

HIGHWAY & BUILDING MATERIALS TESTING LABORATORY | STRUCTURAL |
GEO TECHNICAL | PROJECT MANAGEMENT | SURVEYING SERVICES |

Format No: CP/TF/01

## TEST REPORT ON COARSE AGGREGATES

| | | |
|---|---|---|
| **Lab ID** | : | **CP-2019-02-27-75** **Date: 20-12-18** |
| **Customer** | : | Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore. |
| **Address** | : | Vidyaranyapura Sub Division, BBMP, Bangalore. |
| **Project Name** | : | Construction of RCC Drain at 9th Main Road Sapthagiri Layout in Ward No.09 (Vidyaranyaoura) Vidyaranyapura Sub Division. |
| **Agency** | : | Sri.K.Anil Kumar No:84-L, 2ND Floor, 3rd Cross, 4th Main, HAL 3rd Stage Bangalore-560075. |
| **Customer's Reference** | : | BBMP/EE/BTP/WO/189/2018-19 |
| **Source of Sample** | : | Sample supplied by Agency |
| **Sample condition** | : | Satisfactory |
| **Date of Receipt** | : | 17-12-18 |
| **Sample Type** | : | 40mm down size coarse aggregate |
| **Reference to BIS codes** | : | IS: 383:2016 (Specification for Coarse and fine Aggregates )<br>IS: 2386 :1963(Part - 1,3,4) RA2011<br>IS 2386 Part 1: Particle Size and Shape<br>IS 2386 Part 3: Specific gravity, Density, Voids,Water Absorption<br>IS 2386 Part 4: Mechanical Properties |
| **Date of test** | : | 17-12-18 |

**SIEVE ANALYSIS (PARTICLE SIZE DISTRIBUTION) OF 40MM DOWN COARSE AGGREGATE:**

**Total weight taken : 15000 grams**

| Sample No. | Sieve No. | Weight Retained in gms | Cumulative Weight Retained in gms | % Cumulative Weight Retained | % Passing | Required as per IS 383:2016 |
|---|---|---|---|---|---|---|
| 1 | 80 mm | 0 | 0 | 0.0 | 100 | 100 |
| 2 | 40 mm | 245 | 245 | 1.6 | 98.4 | 90-100 |
| 3 | 20 mm | 7875 | 8120 | 54.1 | 45.9 | 30-70 |
| 4 | 10 mm | 3899 | 12019 | 80.1 | 19.9 | 10-35 |
| 5 | 4.75 mm | 2588 | 14607 | 97.4 | 2.6 | 0-5 |
| 6 | Pan | 393 | 15000 | 100.0 | 0 | --- |



Assistant Executive Engineer
Vidyaranyapura Sub Division
BBMP, Bangalore - 97

CIVIL PRO Sig..... Date..... BANGALORE

Format No: CP/TF/01

## TEST REPORT ON COARSE AGGREGATES

**Lab ID** : **CP-2019-02-27-75** **Date: 20-12-18**

**PHYSICAL PROPERTIES**

| Sl.no | Tests | Result | Requirements as per IS:383-2016 |
|---|---|---|---|
| 1 | Flakiness Index(%) | 12.4 | Combined Flakiness & Elongation Index Shall not Exceed 40% for Uncrushed & Crushed Aggregate |
| 2 | Elongation Index(%) | 11.9 | |
| 3 | Specific Gravity | 2.64 | _ |
| 4 | Bulk Density(Loose) (Kg/l) | 1.38 | _ |
| 5 | Bulk Density(Compacted) (Kg/l) | 1.45 | _ |
| 6 | Water Absorption(%) | 0.22 | _ |

**Note:**
The results pertain to the samples received and tested.
All information furnished by Customer/Representative
Any correction in the report will make this report invalid
This report without prior written approval should not be reproduced or published in full or part.
Samples will be disposed after 90 days from the date of issue of test certificate

**FOR CIVIL Pro.**

**R KARTHIK RECHAN**
Authorized Signatory
**Quality Manager**

CIVIL Pro Sig..... Date..... BANGALORE


****End of Report****

Assistant Executive Engineer
Vidyaranyapura Sub Division
BBMP, Bangalore - 97

Format No: CP/TF/01

## TEST REPORT ON COARSE AGGREGATES

| | | |
|---|---|---|
| **Lab ID** | : | **CP-2019-02-27-75** **Date: 19-12-18** |
| **Customer** | : | Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore. |
| **Address** | : | Vidyaranyapura Sub Division, BBMP, Bangalore. |
| **Project Name** | : | Construction of RCC Drain at 9th Main Road Sapthagiri Layout in Ward No.09 (Vidyaranyaoura) Vidyaranyapura Sub Division. |
| **Agency** | : | Sri.K.Anil Kumar No:84-L, 2ND Floor, 3rd Cross, 4th Main, HAL 3rd Stage Bangalore-560075. |
| **Customer Reference** | : | BBMP/EE/BTP/WO/189/2018-19 |
| **Source of Sample** | : | Sample supplied by Agency |
| **Sample Condition** | : | Satisfactory |
| **Date of Receipt** | : | 17-12-18 |
| **Sample Type/ Size** | : | 20mm down size coarse aggregate |
| **Reference to BIS codes** | : | IS: 383:2016 (Specification for Coarse and fine Aggregates )<br>IS: 2386 :1963(Part - 1,3,4) RA2011<br>IS 2386 Part 1: Particle Size and Shape<br>IS 2386 Part 3: Specific gravity, Density, Voids,Water Absorption<br>IS 2386 Part 4: Mechanical Properties |
| **Date of test** | : | 17-12-18 |

**SIEVE ANALYSIS (PARTICLE SIZE DISTRIBUTION) OF 20MM DOWN COARSE AGGREGATE:**

**Total weight taken : 5000 grams**

| Sample No. | Sieve No. | Weight Retained in gms | Cumulative Weight Retained in gms | % Cumulative Weight Retained | % Passing | Required as per IS 383:2016 |
|---|---|---|---|---|---|---|
| 1 | 40 mm | 0 | 0 | 0 | 100 | 100 |
| 2 | 20 mm | 298 | 298 | 6.0 | 94.0 | 90-100 |
| 3 | 10 mm | 2645 | 2943 | 58.9 | 41.1 | 25-55 |
| 4 | 4.75 mm | 1811 | 4754 | 95.1 | 4.9 | 0-10 |
| 5 | Pan | 246 | 5000 | 100 | 0 | – |



Assistant Executive Engineer
Vidyaranyapura Sub Division
BBMP Bangalore - 97

CIVIL Pro Sig..... Date..... BANGALORE

Format No: CP/TF/01

## TEST REPORT ON COARSE AGGREGATES

**Lab ID** : **CP-2019-02-27-75** **Date: 19-12-18**

**PHYSICAL PROPERTIES**

| Sl.no | Tests | Result | Requirements as per IS:383-2016 |
|---|---|---|---|
| 1 | Flakiness Index(%) | 8.9 | Combined Flakiness & Elongation Index Shall not Exceed 40% for Uncrushed & Crushed Aggregate |
| 2 | Elongation Index(%) | 11.4 | |
| 3 | Specific Gravity | 2.62 | – |
| 4 | Bulk Density(Loose) (Kg/l) | 1.42 | – |
| 5 | Bulk Density(Compacted) (Kg/l) | 1.48 | – |
| 6 | Water Absorption(%) | 0.35 | – |
| 7 | Aggregate crushing Value(%) | 24.8 | Max 30% for Aggregates to be used in concrete for wearing Surface, In case Aggregate Crushing Value Exceeds 30% then the test for ten percent fines should be conducted for Aggregates to be used in concrete other than for wearing Surface. |
| 8 | Aggregate Impact Value(%) | 25.1 | 30% for Aggregates to be used in concrete for wearing Surface,<br>45% for Aggregates to be used in concrete other than for wearing Surface. |

**Note:**

The results pertain to the samples received and tested.
All information furnished by Customer/Representative
Any correction in the report will make this report invalid
This report without prior written approval should not be reproduced or published in full or part.
Samples will be disposed after 90 days from the date of issue of test certificate

**FOR CIVIL Pro.**

**R KARTHIK RECHAN**
Authorized Signature
**Quality Manager**

Assistant Executive Engineer
Vidyaranyapura Sub Division
BBMP, Bangalore-97

CIVIL Pro Sig..... Date..... BANGALORE


*End of Report*

Format No: CP/TF/01

# TEST REPORT OF FINE AGGREGATE

**Lab ID** : **CP-2019-02-27-75** **Date: 19-12-18**

**Customer** : Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.

**Address** : Vidyaranyapura Sub Division, BBMP, Bangalore.

**Project Name** : Construction of RCC Drain at 9th Main Road Sapthagiri Layout in Ward No.09 (Vidyaranyaoura) Vidyaranyapura Sub Division.

**Agency** : Sri.K.Anil Kumar No:84-L, 2ND Floor, 3rd Cross, 4th Main, HAL 3rd Stage Bangalore-560075.

**Customer's Reference** : BBMP/EE/BTP/WO/189/2018-19

**Source of Sample** : Sample supplied by Agency

**Sample Condition** : Satisfactory

**Date of Receipt** : 17-12-18

**Sample Type** : Fine Aggregate

**Reference to BIS codes** : IS 383 : 2016 (Specification for Coarse and fine Aggregates)
IS: 2386 :1963(Part - 1, 3) RA2012
IS 2386 Part 1: Particle Size and Shape
IS 2386 Part 3: Specific gravity, Density, Voids,Water Absorption

**Date of test** : 17-12-18

**Total weight taken** : 1000 grams

| Sl.no | Sieve Size | Weight Retained (gms) | Cumulative Weight Retained (gms) | % Cumulative Weight Retained | % Passing | Requirement as per IS 383:2016 | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Grading Zone I | Grading Zone II | Grading Zone III | Grading Zone IV |
| 1 | 10 mm | 0 | 0 | 0.0 | 100.0 | 100 | 100 | 100 | 100 |
| 2 | 4.75 mm | 22 | 22 | 2.2 | 97.8 | 90-100 | 90-100 | 90-100 | 95-100 |
| 3 | 2.36 mm | 185 | 207 | 20.7 | 79.3 | 60-95 | 75-100 | 85-100 | 95-100 |
| 4 | 1.18 mm | 205 | 412 | 41.2 | 58.8 | 30-70 | 55-90 | 75-100 | 90-100 |
| 5 | 600 micron | 218 | 630 | 63.0 | 37.0 | 15-34 | 35-59 | 60-79 | 80-100 |
| 6 | 300 micron | 142 | 772 | 77.2 | 22.8 | 5-20 | 8-30 | 12-40 | 15-50 |
| 7 | 150 micron | 173 | 945 | 94.5 | 5.5 | 0-10 | 0-10 | 0-10 | 0-15 |
| 8 | Pan | 55 | 1000 | 100.0 | 0.0 | --- | --- | --- | --- |

**Result :The tested Sample Conforms to Grading Zone II**



Assistant Executive Engineer
Vidyaranyapura Sub Division
BBMP, Bangalore - 97

CIVIL Pro Sig Date BANGALORE

# TEST REPORT OF FINE AGGREGATE

**Lab ID** : **CP-2019-02-27-75** **Date: 19-12-18**

**PHYSICAL PROPERTIES**

| Sl.no | Tests | Result | Requirements as per IS 383:2016 |
|---|---|---|---|
| 1 | Water Absorption(%) | 1.38 | – |
| 2 | Specific Gravity | 2.51 | – |
| 3 | Material finer than 75 micron(%) | 4.8 | Uncrushed fine Aggregate Max 3%, Crushed Fine aggregate Max 15%, Mixed Fine aggregate Max 12%, Manufactured Fine aggregate Max 10% |

**Note:**
The results pertain to the samples received and tested.
All information furnished by Customer/Representative
Any correction in the report will make this report invalid
This report without prior written approval should not be reproduced or published in full or part.
Samples will be disposed after 90 days from the date of issue of test certificate

**FOR CIVIL Pro.**

**R KARTHIK RECHAN**
Authorized Signatory
**Quality Manager**

CIVIL Pro Sig..... Date..... BANGALORE


****End of Report****

Assistant Executive Engineer
Vidyaranyapura Sub Division
BBMP, Bangalore - 97

M : 9972924526 | Tel : +91 80 23444801 | e : rechan6630@yahoo.co.in, civilproexperts@gmail.com

Format No: CP/TF/01

## TEST RESULTS OF STEEL

| | | |
|---|---|---|
| **Lab ID** | : | **CP-2019-02-27-75** **Date: 23-12-18** |
| **Customer** | : | Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore. |
| **Address** | : | Vidyaranyapura Sub Division, BBMP, Bangalore. |
| **Project Name** | : | Construction of RCC Drain at 9th Main Road Sapthagiri Layout in Ward No.09 (Vidyaranyaoura) Vidyaranyapura Sub Division. |
| **Agency** | : | Sri.K.Anil Kumar No:84-L, 2ND Floor, 3rd Cross, 4th Main, HAL 3rd Stage Bangalore-560075. |
| **Customer's Reference** | : | BBMP/EE/BTP/WO/189/2018-19 |
| **Source of Sample** | : | Sample supplied by Agency |
| **Sample Condition** | : | Satisfactory |
| **Date of Receipt** | : | 21-12-18 |
| **Sample Type** | : | Sunvik |
| **Reference to BIS codes** | : | IS 1786-2008, IS:1608-2005(RA 2011), IS 1599-2012. |
| **Date of test:** | : | 22-12-18 |

| Sl.No | Identification of sample | Grade of the sample | Diameter of the steel bar | Weight of the sample | Yield stress | Tensile strength | Elongation | Bend test | Rebend test |
|---|---|---|---|---|---|---|---|---|---|
| | | | (mm) | (kg/m) | (N/mm2) | (N/mm2) | (%) | | |
| 1 | Sunvik | Fe500 | 8 | 0.394 | 512 | 652 | 20.0% | Satisfactory | Satisfactory |
| 2 | Sunvik | Fe500 | 10 | 0.617 | 528 | 672 | 20.0% | Satisfactory | Satisfactory |
| 3 | Sunvik | Fe500 | 12 | 0.888 | 544 | 668 | 20.0% | Satisfactory | Satisfactory |

**Note:**

The results pertain to the samples received and tested.
All information furnished by Customer/Representative
Any correction in the report will make this report invalid
This report without prior written approval should not be reproduced or published in full or part.
Samples will be disposed after 90 days from the date of issue of test certificate

FOR CIVIL Pro.

**R KARTHIK RECHAN**
**Authorized Signatory**
**Quality Manager**

Assistant Executive Engineer
Vidyaranyapura Sub Division
BBMP, Bangalore-97

CIVIL Pro Sig..... Date..... BANGALORE


*End of Report*

Format No: CP/TF/01

# TEST REPORT OF PRECAST COVER SLAB

**Lab ID** : **CP-2019-02-27-75** **Date: 28-12-18**

**Customer** : Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.

**Address** : Vidyaranyapura Sub Division, BBMP, Bangalore.

**Project Name** : Construction of RCC Drain at 9th Main Road Sapthagiri Layout in Ward No.09 (Vidyaranyaoura) Vidyaranyapura Sub Division.

**Agency** : Sri.K.Anil Kumar No:84-L, 2ND Floor, 3rd Cross, 4th Main, HAL 3rd Stage Bangalore-560075.

**Customer's Reference** : BBMP/EE/BTP/WO/189/2018-19

**Source of Sample** : Sample supplied by Agency

**Sample Condition** : Satisfactory

**Date of Receipt** : 24-12-18

**Sample Type /Size** : Precast Cover Slab

**Reference to BIS codes** : IS: 516 - 1959 Methods of Tests for Strength of Concrete

**Date of test** : 24/12/2018

| Sl. No. | Identification Mark | Diameter of the core | Height of the core | Weight of the core | Area | Failure Load | Core Compressive strength | Corrected Cylinder Compressive strength | Equivalent Cube Compressive strength |
|---|---|---|---|---|---|---|---|---|---|
| | | (mm) | (mm) | (kg) | (Sq.mm) | (KN) | ($N/mm^2$) | ($N/mm^2$) | ($N/mm^2$) |
| 1 | Cover Slab-1 | 75.52 | 100.49 | 1.116 | 4478 | 80.9 | 18.1 | 16.8 | 21.0 |
| 2 | Cover Slab-2 | 75.49 | 100.53 | 1.122 | 4475 | 82.3 | 18.4 | 17.1 | 21.4 |
| 3 | Cover Slab-3 | 75.53 | 100.52 | 1.118 | 4480 | 81.5 | 18.2 | 16.9 | 21.1 |

**Note:**

The results pertain to the samples received and tested.
All information furnished by the Customer/Representative
Any correction in the report will make this report invalid
This report without prior written approval should not be reproduced or published in full or part.
Samples will be disposed after 90 days from the date of issue of test certificate

**FOR CIVIL Pro.**

**R KARTHIK RECHAN**
Authorized Signatory
**Quality Manager**

Assistant Executive Engineer
Vidyaranyapura Sub Division
BBMP, Bangalore-97

CIVIL Pro Sig..... Date..... BANGALORE


****End of Report****

M : 9972924526 | Tel : +91 80 23444801 | e : rechan6630@yahoo.co.in, civilproexperts@gmail.com

HIGHWAY & BUILDING MATERIALS TESTING LABORATORY | STRUCTURAL |
GEO TECHNICAL | PROJECT MANAGEMENT | SURVEYING SERVICES |

CIVIL PRO
AN ISO 9001 : 2008 COMPANY &NABL ACCREDITED LABORATORY AS PER ISO/IEC 17025:2005
# 4, 7TH MAIN MALLESWARAM, BANGALORE -3

Format No: CP/TF/01

# TEST REPORT OF CEMENT CONCRETE CUBES

**Date: 14/01/2019**

| | | |
|---|---|---|
| **Lab ID** | : | **CP-2019-02-27-75** |
| **Customer** | : | Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore. |
| **Address** | : | Vidyaranyapura Sub Division, BBMP, Bangalore. |
| **Project Name** | : | Construction of RCC Drain at 9th Main Road Sapthagiri Layout in Ward No.09 (Vidyaranyaoura) Vidyaranyapura Sub Division. |
| **Agency** | : | Sri.K.Anil Kumar No:84-L, 2ND Floor, 3rd Cross, 4th Main, HAL 3rd Stage Bangalore-560075. |
| **Customer's Reference** | : | BBMP/EE/BTP/WO/189/2018-19 |
| **Source of Sample** | : | Sample supplied by Agency |
| **Sample Condition** | : | Satisfactory |
| **Date of Receipt** | : | 09-01-19 |
| **Customer ID** | : | Drain Side Wall Concrete |
| **Sample Type /Size** | : | 150X150X150 mm |
| **Sample grade/Age** | : | M20 / 7 Days Compressive Strength |
| **Reference to BIS codes** | : | IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5 |
| **Date of test** | : | 14/01/2019 |

| Sl. No. | Identification Mark | Grade of concrete | Date of Casting | Date of Testing | Dimension of the Specimen (mm) | Cross sectional area (Sq.mm) | Weight of the sample (kg) | Failure Load (KN) | Compressive strength ($N/mm^2$) | Average Compressive Strength ($N/mm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Drain Side Wall Concrete | M20 | 07/01/2019 | 14/01/2019 | 151.28 X 149.30 X 151.54 | 22585 | **8.624** | 414.7 | 18.4 | 18.4 |
| 2 | Drain Side Wall Concrete | M20 | 07/01/2019 | 14/01/2019 | 151.71 X 151.83 X 149.57 | 23034 | **8.396** | 423.7 | 18.4 | |
| 3 | Drain Side Wall Concrete | M20 | 07/01/2019 | 14/01/2019 | 149.50 X 149.72 X 149.24 | 22382 | **8.667** | 414.7 | 18.5 | |

**Note:**
The results pertain to the samples received and tested.
All information furnished by Customer/Representative
Any correction in the report will make this report invalid
This report without prior written approval should not be reproduced or published in full or part.
Samples will be disposed after 90 days from the date of issue of test certificate

Assistant Executive Engineer
Vidyaranyapura Sub Division
BBMP, Bangalore - 97

**FOR CIVIL Pro.**
**R KARTHIK RECHAN**
Authorized Signatory
**Quality Manager**

CIVIL Pro Sig..... Date..... BANGALORE


****End of Report****

M : 9972924526 | Tel : +91 80 23444801 | e : rechan6630@yahoo.co.in, civilproexperts@gmail.com

HIGHWAY & BUILDING MATERIALS TESTING LABORATORY | STRUCTURAL |
GEO TECHNICAL | PROJECT MANAGEMENT | SURVEYING SERVICES |

Format No: CP/TF/01

# TEST REPORT OF CEMENT CONCRETE CUBES

**Lab ID** : **CP-2019-02-27-75** **Date: 04/02/2019**

**Customer** : Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore.

**Address** : Vidyaranyapura Sub Division, BBMP, Bangalore.

**Project Name** : Construction of RCC Drain at 9th Main Road Sapthagiri Layout in Ward No.09 (Vidyaranyaoura) Vidyaranyapura Sub Division.

**Agency** : Sri.K.Anil Kumar No:84-L, 2ND Floor, 3rd Cross, 4th Main, HAL 3rd Stage Bangalore-560075.

**Customer's Reference** : BBMP/EE/BTP/WO/189/2018-19

**Source of Sample** : Sample supplied by Agency

**Sample Condition** : Satisfactory

**Date of Receipt** : 09-01-19

**Customer ID** : Drain Side Wall Concrete

**Sample Type /Size** : 150X150X150 mm

**Sample grade/Age** : M20 / 28 Days Compressive Strength

**Reference to BIS codes** : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

**Date of test** : 04/02/2019

| Sl. No. | Identification Mark | Grade of concrete | Date of Casting | Date of Testing | Dimension of the Specimen (mm) | Cross sectional area (Sq.mm) | Weight of the sample (kg) | Failure Load (KN) | Compressive strength ($N/mm^2$) | Average Compressive Strength ($N/mm^2$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Drain Side Wall Concrete | M20 | 07/01/2019 | 04/02/2019 | 149.43 X 150.81 X 150.80 | 22536 | **8.937** | 533.5 | 23.7 | 23.0 |
| 2 | Drain Side Wall Concrete | M20 | 07/01/2019 | 04/02/2019 | 149.17 X 149.48 X 150.29 | 22298 | **8.945** | 497.0 | 22.3 | |
| 3 | Drain Side Wall Concrete | M20 | 07/01/2019 | 04/02/2019 | 150.93 X 150.57 X 150.47 | 22725 | **8.993** | 525.9 | 23.1 | |

**Note:**

The results pertain to the samples received and tested.
All information furnished by Customer/Representative
Any correction in the report will make this report invalid
This report without prior written approval should not be reproduced or published in full or part.
Samples will be disposed after 90 days from the date of issue of test certificate

Assistant Executive Engineer
Vidyaranyapura Sub Division
BBMP, Bangalore - 97

**FOR CIVIL Pro.**

**R KARTHIK RECHAN**
Authorized Signatory
**Quality Manager**

CIVIL Pro Sig..... Date..... BANGALORE


****End of Report****

M : 9972924526 | Tel : +91 80 23444801 | e : rechan6630@yahoo.co.in, civilproexperts@gmail.com

HIGHWAY & BUILDING MATERIALS TESTING LABORATORY | STRUCTURAL | GEO TECHNICAL | PROJECT MANAGEMENT | SURVEYING SERVICES |